

REMARKS

Claims 1, 3-5, 7-10 and 12-17 are pending and stand rejected in the Office Action of February 21, 2008. Specifically, the claims are rejected as follows: claim 1 is rejected under 35 USC 103(a) as unpatentable over Kazuhisa (JP 11-133490) in view of Fuke et al. (US Patent No. 6,011,929); Claims 3, 4, 9, 10, 12, 16 and 17 stand rejected under 35 USC 103(a) as unpatentable over Kazuhisa in view of Fuke et al. and further in view of Kobayashi (US Patent No. 6,823,198); and claims 5, 7, 8 and 13-15 stand rejected under 35 USC 103(a) as unpatentable over Kazuhisa in view of Fuke et al. and further in view of Kobayashi as applied to claims 3, 4, 10 and 12 and further in view of Fumio et al. (US 2002/0089601 A1). Applicant notes that the current Office Action raises new grounds of rejection based on Applicant's prior arguments. Applicant submits that the new grounds for rejecting the claims are incorrect when the invention as claimed is properly understood. For that reason, Applicant has amended independent claims 3 and 10 to further clarify the claimed invention.

By way of background, as Applicant explains in his original application, objects of the claimed invention include providing a flash unit, a camera device, and a mobile terminal which can provide an increased amount of flash light in a smaller package. Applicant's claimed invention maximizes flash operation by providing a light condensing plate that includes both a light dispersing surface and a light condensing surface. In a preferred embodiment, those surfaces are opposite each other on a single plate. To further enhance flash operation, the claimed device includes a guide at least in proximity with the emission area of the light emitting diode (LED). In a preferred embodiment, as disclosed for example in Fig. 2 of Applicant's original specification (See Fig. 2 of Applicant's published application US 2005/0162543 A1), the guide has a frustum shape and is plated such that an inner surface of the guide serves as a mirror.

One other object of the claimed invention is the compactness of the device. This object is achieved by having a common structure for supporting the camera module and the LED-based flash unit. Again, Applicant's application is instructive in this regard. In an embodiment, there is disclosed a structure (base board 1) that supports both the camera module and the LED. With reference to Fig. 6C of Applicant's application, the specification explains "Fig. 6C shows a structure in which the camera module 7 and LEDs 2 are disposed on the base board." US 2005/0162543 A1 at [0037].

Applicant submits that the claims as amended now clarify the above advantages and clearly distinguish the claimed invention over the cited prior art, which fails to teach or suggest the claimed features or any of the advantages. The prior art is deficient in several respects. First, the cited prior art fails to disclose an LED as a light source used in a flash unit of a camera module or in a camera device. Kazuhisa et al., while disclosing the use of an LED for illumination, does not disclose a camera module of the type claimed. Rather, Kazuhisa discloses a conventional film camera that is preloaded with a film package. The remaining cited prior art, Fuke et al., Kobayashi et al., and Fumio et al., all disclose flash units using Xenon tubes, **not LEDs**. Thus, the prior art, alone or in combination, fails to disclose a configuration in which a LED flash unit is assembled to a camera module on a common substrate in either a camera device or mobile terminal. For this reason, the prior art cannot render obvious any of the pending claims.

Referring specifically to the claims. Claims 3 and 10 recite aspects that cannot be found in the cited prior art. For example, claim 3 and 10 specifically require a flash unit having an LED implemented directly on a substrate that also carries the camera module. Such a design cannot be achieved from the devices disclosed in the prior art. As previously stated, only

Kazuhisa discloses use of an LED. However, that LED is used in connection with a film camera.

Kazuhisa explains in the English-language abstract, "this film unit is equipped with the white light emitting diode 1. As is well understood by those skilled in the art, the film camera of Kazuhisa does not carry the LED-flash unit and camera module on the same substrate.

Further, with respect to claims 3 and 10, Applicant has amended the term "convexo-concave surface" to characterize the surface as "having a light-condensing function." Applicant submits this amendment should address the Examiner's concerns over the definition of convexo-concave, which Applicant's believe is readily apparent from the specification. Those claims were also amended to clarify that the light condensing plate has a light dispersing surface. Thus, it should be clear that the light condensing plate has both a light dispersing surface and a surface having a light-condensing function.

Claims 3 and 10 further require a guide having an opening that is equal to the emission area of the LED and that the emission area of the LED is disposed lower than the lens of the camera module with reference to a surface of the substrate to which the camera module is attached. Clearly, this claimed aspect cannot be found in the film camera of the Kazuhisa. In this regard, Applicant's application explains with reference to Fig. 6C, for example, "the light-emitting surfaces of the LEDs 2 are disposed so as to be lower than the lens surface of the camera module 7 with reference to the base board 1; thus, the flash light is hardly disposed on the lens of the camera module 7." US 2005/0162543 A1 at [0037].

As should be apparent Applicant's claimed invention covers digital cameras modules, which are in many respects vastly different in function and operation from film cameras. Digital cameras necessitate a new design associated with correlation between a compact camera module and an LED. Applicant has achieved such a design. The camera

module of Applicant's claimed invention is implemented on the same substrate with a LED flash unit. Such a design would normally create operation problems inasmuch as the LED and the camera module must be separated since the light emitted from the LED may be captured by the camera module given its proximity. The claimed invention prevents such a drawback, in part, by requiring that "the emission area of the LED is disposed lower than said lens of the camera module with reference to a surface of a board to which said camera module is attached." This correlation between the compact camera module and the LED is not obvious and not disclosed or suggested in the prior art cited by the Examiner.

In addition, in the claimed invention, a guide can be positioned in a gap section produced between the lens surface of the camera and the emission area of the LED based on the correlation explained above. As claimed, the "guide has an opening section that is equal to the emission area of the LED, and the opening section is disposed in proximity to the emission area or in contact with the emission area." As a result of this claimed configuration, it is possible to provide a guide that will not increase the thickness of the camera module.

In contrast, Fuke, et al., Fumio et al., and Kobayashi et al. each discloses flashing light sources using Xenon tubes. In general, a backside of a Xenon tube, having an elongated tube shape with respect to an image-capturing direction of a camera, must be covered by a reflector, which inevitably increases the thickness of the camera module. Thus, Fuke et al., Fumio et al., and Kobayashi et al. disclose large-size guides.

In contrast, light does not leak in the present invention having the configuration in which the backside of the LED is not covered by the guide, and in which the guide is implemented directly on the substrate. This configuration facilitates further downsizing of the guide. The configuration of disposing the guide into the aforementioned gap can also facilitate the downsizing of the camera module.

As previously stated, the Applicant believes that the present invention is unobvious over the combination of the citations; therefore, the present application is in an allowable condition.

Applicant further notes that the specification has been amended to correct a minor error that arose in the translation of the original Japanese priority application. The current application incorrectly identifies a Japanese reference. That typographical error has now been corrected. No new matter has been introduced by this amendment.

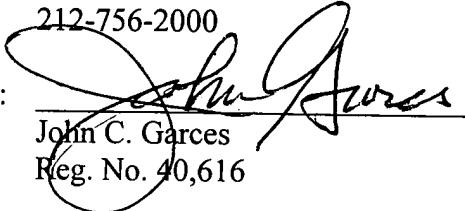
For at least the reasons set forth above, Applicant respectfully submits that the claims, as amended, are in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested. The Examiner is urged to telephone Applicant's undersigned counsel at the number noted below if it will advance the prosecution of this

application, or with any suggestion to resolve any condition that would impede allowance. In the event that any extension of time is required, Applicant petitions for that extension of time required to make this response timely. Kindly charge any additional fee, or credit any surplus, to Deposit Account No. 50-0675, Order No. 848075-0075.

Respectfully submitted,

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